

50X1-HUM

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Office of Electric Power, Bureau of Industry,
Ministry of Industry, North Korea], P'yongyang
July 1, 1947

50X1-HUM

TRANSMISSION SYSTEM

Summary of Transmission Lines Wonsan Branch

Name of Transmission Line	Section Terminals	Voltage KV	Line Length KM	Electric wire and cable Kind	Span Length KM	Kind of Main-Tensioner	Remarks
Wonsan Transmission Line	From Pongnyong Trans. Sta. to Wonsan	66	89.007	Barc. heavy copper wire	72.6	Towers	Darkose Line
Unhung	From Unhung Switch Sta. to Unhung Trans. Sta.	"	33.585	"	72.6	Hires. poles	"
Pak-tai-lyong	From Unhung Trans. Sta. to Post No. 20 Pak-tai-lyong Trans. Sta.	"	24.369	"	"	"	"
Chon-nae-ril	From Unhung Trans. Sta. to Chon-nae-ril Trans. Sta.	"	11.0	"	"	"	"
Chon-chuk-kun-nu	From Wonsan Switch Sta. to Unhung Switch Sta.	"	30.08	"	"	"	"
Iryong	From Unhung Switch Sta. to Iryong Trans. Sta.	"	35.735	"	"	"	"
Taegang	From post No. 113 Taegang Trans. Sta. to Taegang Trans. Sta.	"	7.226	"	"	"	"
No. 2 Kalma	From Wonsan Trans. Sta. to No. 2 Kalma Trans. Sta.	"	9.85	"	"	"	"
Munsan	From Unhung Trans. Sta. to Munsan	22	10.1	"	"	"	"
Sinsang	From Munsan Trans. Sta. to Sinsang	"	8.9	"	"	"	"
Wong'p'o	From Unhung Trans. Sta. to Yonghung Power Grid	"	5.0	"	"	"	"
Chinpyang	From Unhung Switch Sta. to Chinpyang Trans. Sta.	"	11.425	"	4.50	"	"
Yonghung Gang	From Yonghung Trans. Sta. to Yonghung	"	13.7	"	72.6	"	"
Unsu	From Unhung Trans. Sta. to Unsu	"	10.0	"	72.6	"	"
Yonghung Coal Mine	From Yonghung Trans. Sta. to Yonghung Coal Mine	"	10.8	Barc. heavy copper wire	72.6	"	"
Ullim	From Unhung Trans. Sta. to Ullim	"	40.426	Barc. heavy copper wire	72.6	"	"
Sanggyong-dun	From post No. 84 Sanggyong Trans. Sta. to Sanggyong-dun Trans. Sta.	"	10.145	"	5.0	"	"
Kowon Coal Mine	From post No. 125 Kowon Trans. Sta. to Kowon Coal Mine	"	9.2	"	72.6	"	"
Kowon No. 1 Coal Mine	From Kowon No. 1 Coal Mine Trans. Sta. to Kowon No. 1 Coal Mine	"	9.4	"	5.0	"	"
Yonghung	From Kowon Trans. Sta. to Yonghung	"	11.905	"	"	"	"
Kowon	From Munpyang Switch Sta. to Kowon Trans. Sta.	"	26.26	"	5.0	"	"
Chinbung	From post No. 43 Chinbung Trans. Sta. to Chinbung Trans. Sta.	"	5.6	"	72.6	"	"
Munchon Coal Mine	From Chinbung Switch Sta. to Munchon Coal Mine	"	11.2	"	5.0	"	"
Sinbung Coal Mine	From Munchon Coal Mine Trans. Sta. to Sinbung Coal Mine	"	5.407	"	5.0	"	"
Puksang	From Munchon Trans. Sta. to Puksang	"	7.3	"	72.6	"	"
Munpyang	From Wonsan Trans. Sta. to Munpyang Switch Sta.	"	14.7	"	72.6	Hires. poles	"

Name of Transformer Station	Source of motive power	Name of system and river
Santa-ril	Water power	Yang-nu
Sangpyang-ni	Water power	Yang-nu
Yonghung Gang	Water power	Yang-nu

Unhung-nyon
Hyesan-nyon
Munpyang-nyon
Electric power

* Presumably copper steel
and galvanized steel here

TRANSMISSION SYSTEM

Summary of Transmission Lines Wonsan Branch

Name of Transmission Line	Station	Voltage KV	Exist. Length KM	Electric wire and cable Kind	Kind of Main-Construction	Remarks
Wonsan Transmission Line	From Wonsan Transf. Sta.	66	87.007	Copper wire	Double Line	
Unhung	From Unhung Switch Sta.	"	33.785	"	"	
Pak-tai-lyang	From Pak-tai-lyang Transf. Sta.	"	24.369	"	"	
Ch'on-nae-ri	From Ch'on-nae-ri Transf. Sta.	"	11.0	"	"	
Ch'uk-kun-nu	From Ch'uk-kun-nu Transf. Sta.	"	30.08	"	"	
Iryong	From Iryong Transf. Sta.	"	35.735	"	"	
Tae-gang	From Tae-gang Transf. Sta.	"	7.236	"	"	
No. 2 Kalma	From No. 2 Kalma Transf. Sta.	"	9.85	"	"	
Munsan	From Munsan Transf. Sta.	22	10.1	"	"	
Sinsang	From Sinsang Transf. Sta.	"	8.7	"	"	
Wanpo	From Wanpo Transf. Sta.	"	5.0	"	"	
Chang-yang	From Chang-yang Transf. Sta.	"	11.425	"	"	
Yonghung Gang	From Yonghung Gang Transf. Sta.	"	13.7	"	"	
Unsu	From Unsu Transf. Sta.	"	10.0	"	"	
Yonghung Gold Mine	From Yonghung Gold Mine Transf. Sta.	"	10.8	"	"	
Ullim	From Ullim Transf. Sta.	"	40.426	"	"	
Sangpyong-dun	From Sangpyong-dun Transf. Sta.	"	10.145	"	"	
Kowon Coal Mine	From Kowon Coal Mine Transf. Sta.	"	9.2	"	"	
Kowon No. 1 Coal Mine	From Kowon No. 1 Coal Mine Transf. Sta.	"	9.4	"	"	
Yonghung	From Yonghung Transf. Sta.	"	11.905	"	"	
Kowon	From Kowon Transf. Sta.	"	26.26	"	"	
Chinbung	From Chinbung Transf. Sta.	"	5.6	"	"	
Munchon Coal Mine	From Munchon Coal Mine Transf. Sta.	"	11.2	"	"	
Sinpyong Coal Mine	From Sinpyong Coal Mine Transf. Sta.	"	5.487	"	"	
Puk-sang	From Puk-sang Transf. Sta.	"	7.3	"	"	
Munpyong	From Munpyong Transf. Sta.	"	14.7	"	"	

Name of Transformer Station	Source of motive power	Name of system and river
Santa-ri	Water power	Yonghung River
Sangpyong-ni	Water power	Yonghung River
Yonghung Gang	Water power	Yonghung River

Unhung-gang
Hydro-electric
Electricity
Indus.

*presumably copper steel alloy lines meant here

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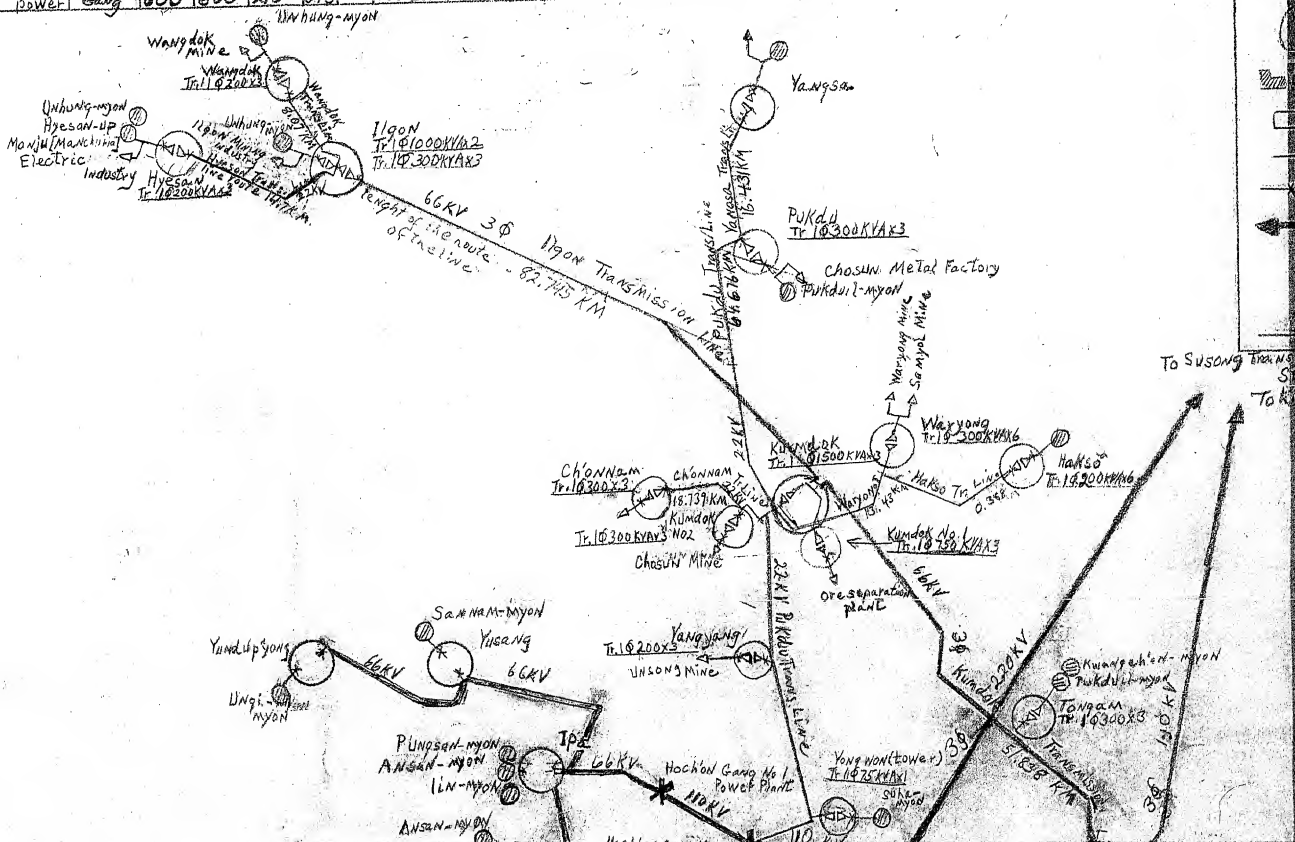
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N SYSTEM OF HAMGYONG NAMDO

SECURITY INFORMATION

Summary of Transformer Equipment

SUMMARY OF TRANSFORMER EQUIPMENT																	
Name of Transformer Station	Source of Motive Power	Name of System and river	Output (KW)		Kind of Transformer	Capacity (KVA)	Voltage (V)	No. of Taps	Type of Transformer		Voltage (KV) P/M - Secondary	No. of Transformer Regular	No. of Transformer Reserve				
			Maximum Output peak	Operating Time					These	Reserve							
Santa-e-river	Water power	Yangliu Ch'ien	350	106	42	305	500	3500	0	2	KVA						
Sung-yang-ni	Water power	Yangliu Ch'ien	285	134	53	182	55	3300	60	3							
Yonghung Gang	Water power	Yonghung Gang	600	600	240	390	75	3300	60	1	250	11	60	3.15 3.38	2.1 2.2	3	1



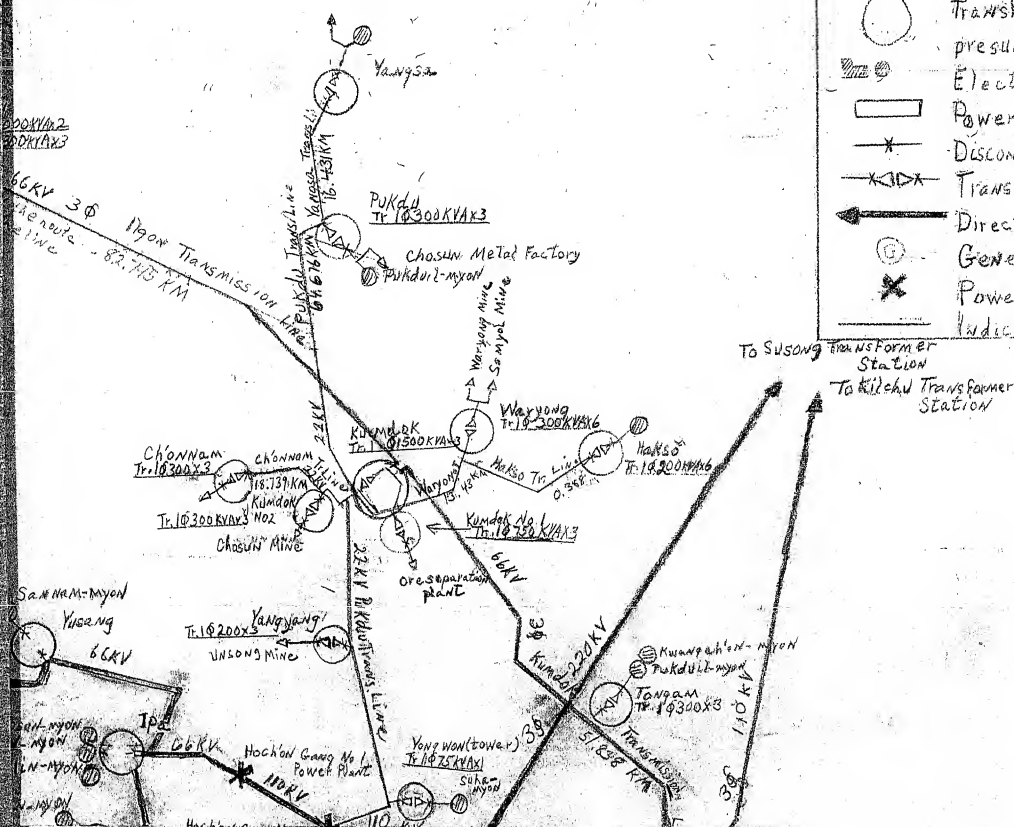
HAMGYONG NAMDO

Equipment

No.	Type	To of Transmission	Transformer		Voltage (KV)	No. of Transformer	Regular	Reserve
			Capacity	Phase				
500	60	2	KVA		Primary			
500	60	3			Secondary			
500	60	1	250	1	60	3.15	3.15	3
						3.38	3.38	1

LEGEND

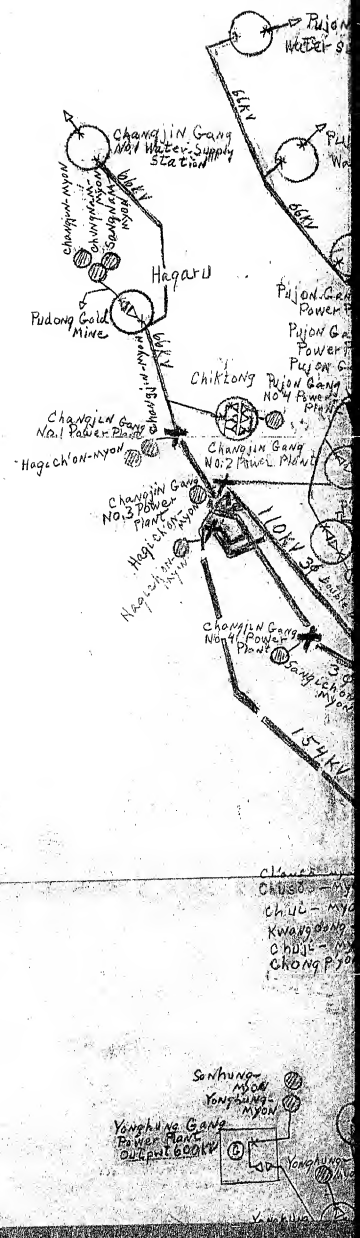
- 220 KV TRANSMISSION LINE
- 154 KV TRANSMISSION LINE
- 110 KV TRANSMISSION LINE
- 66 KV TRANSMISSION LINE
- 22 KV TRANSMISSION LINE
- Transformer station and tower (A tower is presumed to mean a transformer or a post of pole)
- Electric light and power supply locations
- Power Plant
- Disconnecting Switch and current breaker
- Transformer
- Direction of Supply
- Generator
- Power Plant Position

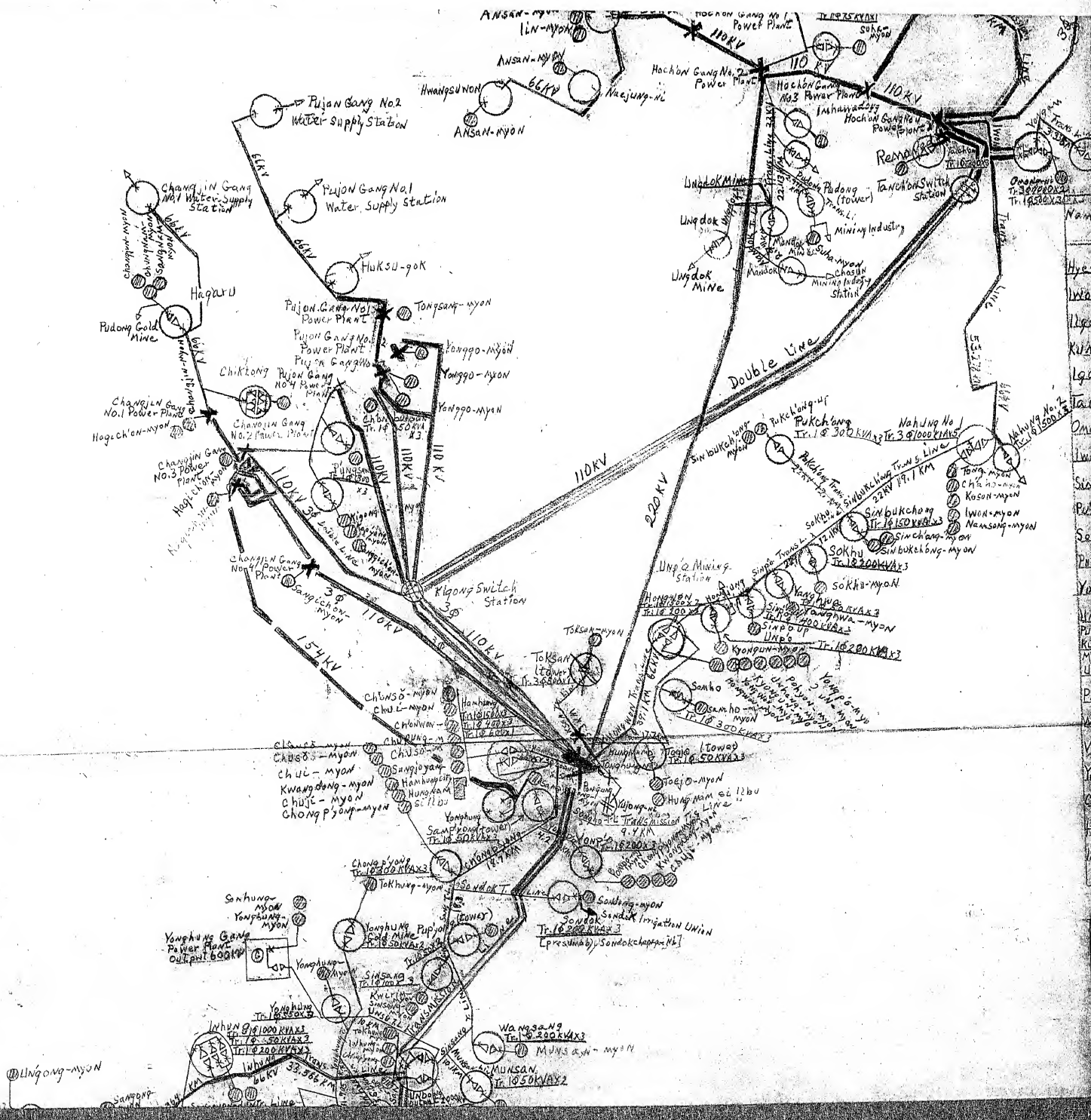


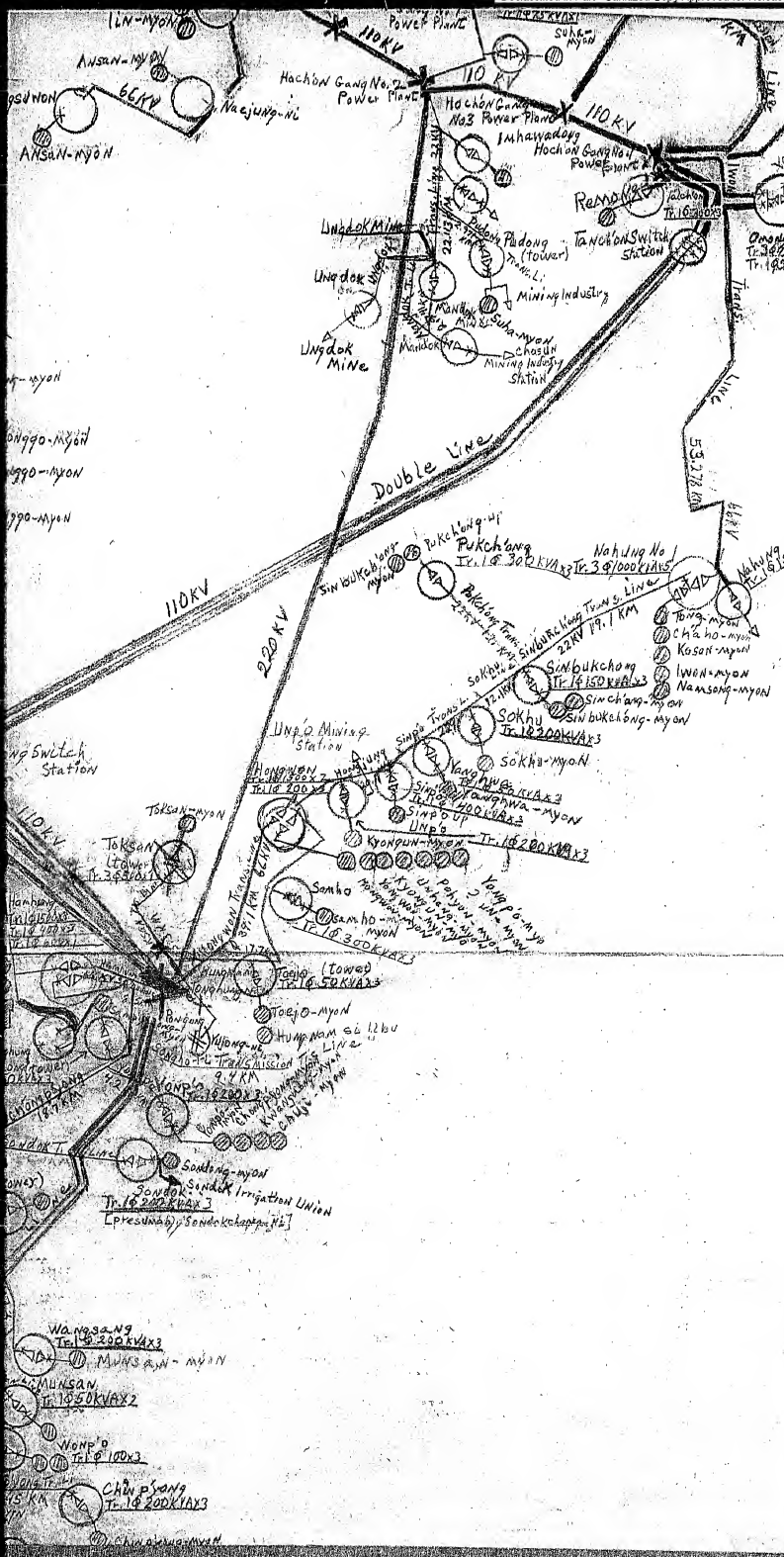
Sinkung Coal Mine	From Munch'on Coal Mine	5.427	5.0	
Pu Ksong	From Munch'on Coal Mine	7.3	5.0	
Munpyong	From Munch'on Transf.	14.7	7.6	H Wood pole
Steel Pipe Plant	From Munch'on Transf.	4.09	5.0	wood pole
Li. Me. L. Ph. N. I.	From Munch'on Transf.	1.777		
No. 2 Sogok	From Munch'on Transf.	5.7	7.6	H Wood pole
Anbyon	From Munch'on Transf.	13.6	7.6	H Wood pole
Pachwa Branch	From Munch'on Transf.	1.883	5.0	
Sogok	From Munch'on Transf.	8	7.6	H Wood pole
Sangdong	From Munch'on Transf.	1.94	7.6	wood pole
Sungong	From Munch'on Transf.	1.661	7.6	
Wonsan	From Munch'on Transf.	66 9.896	8	No. 2 Bare copper wire
Kalma Branch	From Munch'on Transf.	22 .16	15.5	Bare heavy copper wire
Kalma	From Munch'on Transf.	2.718	7.6	H Wood pole

Summary of Transformer Equipment - Wonsan Branch

Name of Transformer Station	Total output KVA	Description of Transformer	Primary Voltage KV	Secondary Voltage KV	Number of Transformer
Unbong Transformer Station	2000	1000 3φ 60	66	22	2
Wonsan Transformer Station	8660	2500 3φ 60	66	22	4
Inhung Transformer Station	3000	1000 3φ 60	66	22	3
Chongdo-ri Transf. Sta.	9000	1500 1φ 60	66	3.45	6
Inyong	4500	1500 1φ 60	66	22	3
Taegang	2700	300 1φ 60	66	3.45	9
No. 2 Kalma Transformer Station	150	50 1φ 60	66	22	3
Wonsan Transf. Sta.	1000	500 3φ 60	66	22	2
Wonsang	130	75 1φ 60	66	22	2
Wang'o	600	200 1φ 60	66	22	3
Chongdo	300	100 1φ 60	66	22	3
Chongdo	600	200 1φ 60	66	22	3







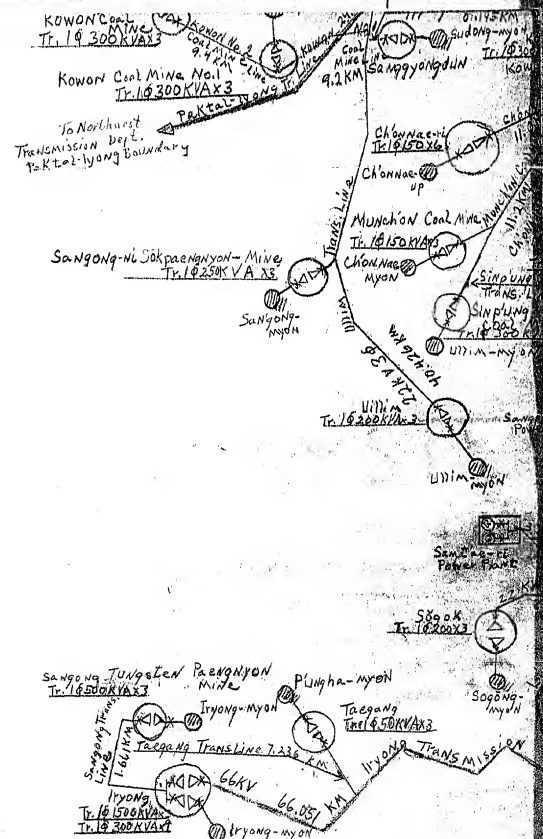
Summary of Transmission Lines [Pukchang]

Name of Transmission Line	Section Terminates	Voltage	Length (km)	Effective Wire
Hyosan Transmission Line	From Hyosan Transf. Sta. to Hyosan	22	14.7	Kinds: twisted Bare, heavy copper wire
Unghok	From Transf. Sta. No. 4 Power Plant to Unghok Transf. Sta.	66	53.28	"
Ilgon	From Transf. Sta. No. 4 Power Plant to Ilgon	"	82.745	"
Kumdok	From Transf. Sta. No. 4 Power Plant to Kumdok Transf. Sta.	"	51.838	"
Ilgon	From Post No. 296 Ilgon Transf. Sta. to Ilgon	"	51.037	"
Tachon	From Transf. Sta. No. 4 Power Plant to Tachon Transf. Sta.	"	7.638	"
Omang-ni Branch Line	From Post No. 26 Ilgon Transf. Sta. to Omang-ni Transf. Sta.	"	2.5	"
Unghok Mine Transf. Line	From Post No. 13 Sinbukchang Transf. Sta. to Unghok Mine Transf. Sta.	22	2.2	"
Sinbukchang	From (Nahung) Transf. Sta. to Sinbukchang Transf. Sta.	"	19.1	Bare heavy copper wire 7/2.0
Pukchang	From Sinbukchang to Pukchang	"	12.8	"
Sokhu	From Sinbukchang to Sokhu	"	12.1	Bare heavy twisted copper wire 7/2.6
Pukku	From Kumdok to Pukku	"	64.676	" 7/3.7
Yongam	From Omang-ni to Yongam	"	3.338	" 7/2.0
Unghok	From Transf. Sta. No. 4 Power Plant to Unghok Transf. Sta.	"	22.113	" 7/2.0
Pukku Branch Transf. Line	From Kumdok to Pukku	"	4.421	"
Kumdok No. 2 Transf. Sta.	From Unghok to Kumdok No. 2	"	2.941	"
Unghok Transf. Line	From Post No. 214 Unghok Transf. Sta. to Pudong Transf. Sta.	"	29.71	" 7/2.0
Pudong	From Ilgon Transf. Sta. to Pudong	"	8.07	"
Waryong	From Kumdok to Waryong	"	13.434	" 7/2.8
Yangsa	From Pukku to Yangsa	"	16.481	"
Chonnam	From Kumdok No. 2 to Chonnam	"	18.739	"
Hakso	From Waryong to Hakso	"	0.388	" ⑪
Imhwa-dong	From Post No. 22 Pukku Transf. Line to Imhwa-dong Transf. Sta.	"	5.91	"

Summary of Transformer Equipment Pukchang Branch

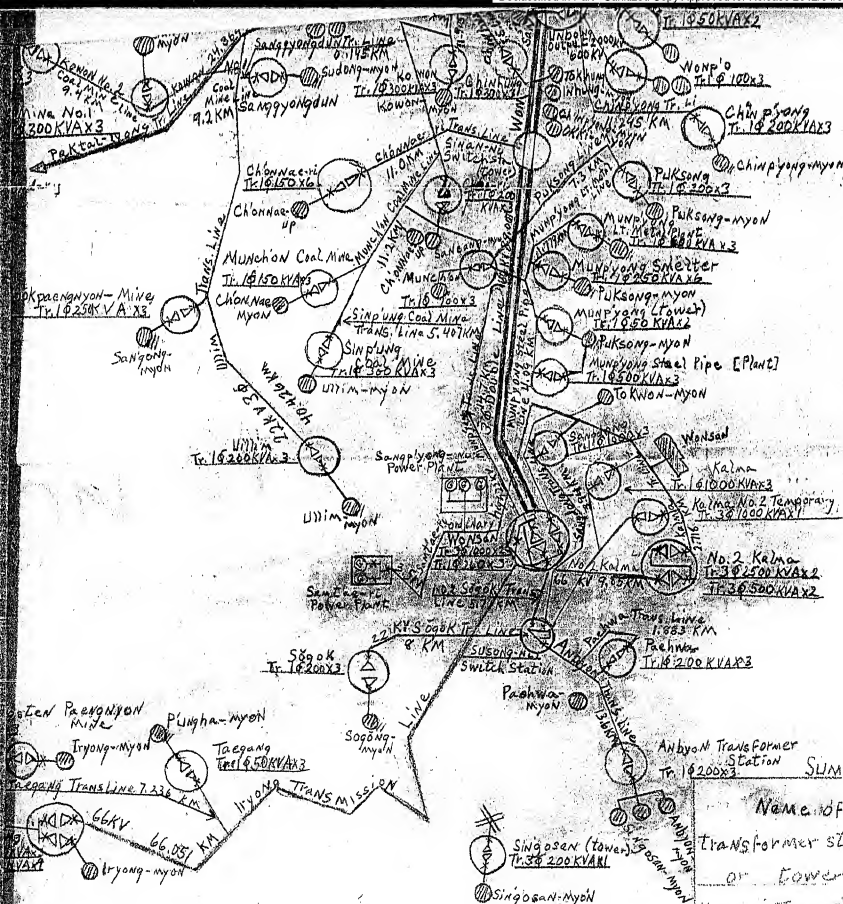
Name of transformer station or tower	Total output KVA	Description of Transformer	Voltage KV	No. of Transf.
Nahung No. 1 Transformer Station	3000	1000 3φ 60	66	3
Nahung No. 2 Transf. Sta.	4500	1500 1φ	22	3
Unghok Mine	2100	300 "	22	3
Unghok Mine	300	100 "	22	3
Sinbukchang	450	150 "	22	3

Kowon No. 2	900	300	"	"	"	3
Kowon Mine	750	250	"	"	"	3
Idangyung Mine	600	200	"	"	"	3
Sungong	900	300	"	"	"	3
Ullim	900	300	"	"	"	3
Chinhung	900	300	"	"	"	3
Kowon	900	300	"	"	"	3
Chewi-ri	600	200	"	"	"	3
Muncheon Coal Mine	450	150	"	"	"	3
Sungong Coal Mine	900	300	"	"	"	3
Muncheon	300	100	"	"	"	3
Pukson	600	200	"	"	"	3
Munpyong	866	50	"	"	"	2
Munpyong Steel Plant	1500	500	"	"	"	3
Munpyong Smelter	1500	250	"	"	"	6
Munpyong Metal Plant	1800	600	"	"	"	3
Sangdong	3000	1000	"	"	"	3
Kalma	3000	1000	3φ	"	"	3
Kalma No. 2	1000	1000	"	"	"	1
Tempotary	600	200	1φ	"	"	3
Sagok	600	200	"	"	"	3
Pachwan	600	200	"	"	"	3
Andy on	600	200	"	"	"	3
Sangon Tungsten	1500	500	"	"	"	3
Pachmyon Mine	50	50	"	"	"	1
Sambanghyop	5	5	"	"	"	1
Sambang	200	200	3φ	"	"	1
Singosan	5	5	1φ	"	"	1
Sangsamang				"	"	1



Summary of TRANSMISSION LINES Hamhung Branch

Name of Transmission Line	Section	Terminals	Voltage KV	Exact Length in KM	Electric Wire and Cable		Kind of Structure	Kind of Maintenance
					Kind	Structure		
Hamhung Trans. Line	From Hamhung Trans. Sta.	To Hamhung Trans. Sta.	66	8.5	Bar. heavy copper wire	7/2.3	Metal Towers	
Changpyong Trans. Line	From Post No. 10 Changpyong	Line to Changpyong Trans. Sta.	22	18.7	"	6.5	Wood poles	
Sinsang	From Changpyong	To Sinsang	"	18.3	"	"	"	
Yonpo	From Post No. 138 Changpyong	Trans. Line to Yonpo Trans. Sta.	"	4.2	"	7/2.3	"	
Sondok	From Post No. 168 Sinsang	Trans. Line to Sondok Trans. Sta.	"	6.0	"	7/2.0	"	
Sangha-ri	From Hamhung Trans. Sta.	To Sangha-ri Trans. Sta.	"	9.4	"	"	"	
Hongwon	From Sangha-ri Trans. Sta.	To Hongwon Trans. Sta.	"	39.1	"	7/2.6	"	
Hongjung	From Hongwon	To Hongjung Trans. Sta.	66	20.1	"	7/2.6	"	
Unpo	From Post No. 138 Hongjung	Trans. Line to Unpo Trans. Sta.	22	0.5	"	5.0	"	
Paju	From Unpo Trans. Sta.	To Paju Trans. Sta.	"	5.2	"	7/2.6	"	
Sinpo	From Paju	To Sinpo Trans. Sta.	"	22.9	"	"	"	
Chonbursan	From Sinpo	To Chonbursan Trans. Sta.	"	13.8	"	7/2.0	"	
Pungsan	From Chonbursan	To Pungsan Trans. Sta.	"	7.2	"	"	"	
Chikdong	From Pungsan	To Chikdong Trans. Sta.	66	7.5	"	7/2.3	"	
Toksan	From Chikdong	To Toksan Trans. Sta.	22	23.3	"	7/2.6	"	
Special high distribution line	From Toksan	To Special high distribution line	"	17.7	"	5.0	"	



Electric Lines

Exact Length in KM	Kind of Electric Wire and Cable	Kind of Structure	Kind of Maintenance
8.5	Bare heavy copper wire	1/2.3	Metal towers
18.7	"	6.5	Wood poles
18.3	"	"	"
4.2	"	1/2.3	"
6.0	"	1/2.0	"
9.4	"	"	"
39.1	"	7/2.6	"
20.1	"	7/2.6	"
0.5	"	5.0	"
5.2	"	7/2.6	"
22.9	"	"	"
13.8	"	7/2.0	"
7.2	"	"	"
7.5	"	7/2.3	"
22.2	"	7/2.6	"

- ① Singosan (tower) Tr. 150KV
- ② Singosan-myon
- ③ Sambang (tower) Tr. 150KV
- ④ Singosan-myon
- ⑤ Sambang-myon
- ⑥ Singosan-myon

Summary of Transformer Equipment Hamhung Branch

Name of Transformer Station or Tower	Total Output KVA	Description of Transformer Capacity (KVA)	Phase	Voltage KV	No. of Transformers	Regular	Reserve
Hamhung Transf. Station	4500	1500	1φ	66	3	3	
	1200	400	"	66	22	3	
	1500	600	3φ	66	3.45	1	[* Note below]
Yongp'o Transf. Station	600	200	1φ	22	3	3	
Chongpyong	900	300	"	"	3	3	
Sondok	600	200	"	"	3	3	
Sinsang	300	100	"	"	3	3	
Unp'o	600	200	"	"	3	3	
Sinp'o	1200	400	"	"	3	3	
Chik'gang	1200	200	"	66	6	6	
Hagary	900	300	"	"	3	3	
Punggyong	900	300	"	22	3	3	
Chongpyong	150	50	"	"	3	3	
Hamhung	2600	1500	"	66	22	3	
		100	"	22	3.45	3	
Toksang Transf. Tower	500	500	3φ	"	1	1	
Torjo	150	50	1φ	"	3	3	
Samho	90	30	"	"	3	3	
S. myong	150	50	"	"	3	3	
		50	"	"	2	2	

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Summary of Transformer Equipment Hamhung Branch

Name of Transformer Station or Tower	Total Output KVA	Description of Transformer	Phase	Voltage KV	No. of Transformers
Hamhung Transf. Station	4500	1500	1φ	60	66 3.45 3
	1200	400	"	66	22 3
	1200	600	3φ	66	3.45 1 [Note below]
Yonpo Transf. Station	600	200	1φ	22	3
Chongpyong	900	300	"	"	3
Sandak	600	200	"	"	3
Sinsang	300	100	"	"	3
Unp'o	600	200	"	"	3
Sinp'o	1200	400	"	"	3
Chiksong	1200	200	"	66	6
Hagang	900	300	"	"	3
Pungso	900	300	"	22	3
Chenbuan	180	50	"	"	3
Hamwon	2600	1500	"	66	22 3
		100	"	22	3.45 3
Toksaw Transf. Tower	500	500	3φ	"	1
Tojo	150	50	1φ	"	3
Samho	90	30	"	"	3
Sampyong	150	50	"	"	3
Pikchong	87	50	"	"	2

Chungwon Transf. Sta.	7500	1500	1φ	"	66	22	3	1
WON HON MIN	2100	300	"	"	66	22	3	1
		200	"	"	66	22	3	1
WON HON MIN	300	100	"	"	66	22	3	1
Sinbukchong	450	150	"	"	66	22	3	1
		100	"	"	66	22	3	1
Pikchong	900	300	"	"	66	22	3	1
Sokhu	600	200	"	"	66	22	3	1
Yong	1730	1000	"	"	66	22	2	1
		300	"	"	66	22	2	1
Yongwon	3500	1000	3φ	"	66	22	2	1
		500	1φ	"	66	22	2	1
Yongwon	2000	1000	3φ	"	66	22	2	1
Tokchon	900	300	1φ	"	66	22	3	1
Yongwon	900	300	"	"	66	22	3	1
Kumdok No. 2	900	300	"	"	66	22	3	1
Kumdok	4500	1500	"	"	66	22	3	1
Kumdok No. 1	2250	750	"	"	66	22	3	1
Yongwon	600	200	"	"	66	22	3	1
Pokdu	900	300	"	"	66	22	3	1
Yong	1730	1000	"	"	66	22	3	1
		300	"	"	66	22	3	1
Yongwon	600	200	"	"	66	22	3	1
Pokdu	900	300	"	"	66	22	3	1
Yong	1730	1000	"	"	66	22	3	1
		300	"	"	66	22	3	1
Yongwon	600	200	"	"	66	22	3	1
Yongwon	600	200	"	"	66	22	3	1
Hakso	1200	200	"	"	66	22	6	1
Changnam	900	300	"	"	66	22	3	1
Naryong	1800	300	"	"	66	22	6	1
Yongwon Transf. Tower	75	75	"	"	66	22	1	1
Yongwon	150	50	"	"	66	22	3	1
Yongwon Transf. Sta.	1100	200	"	"	66	22	3	1
		170	"	"	66	22	3	1
Mandok Aerial Cable	87	50	"	"	66	22	2	1
Mandok Transf. Station	300	100	"	"	66	22	3	1
Yongwon	1500	500	"	"	66	22	3	1
Mandok	225	75	"	"	66	22	3	1
Pudong	1200	300	"	"	66	22	3	1
		100	"	"	66	22	3	1

* Note: Remark is made that this Transformer was installed and increase to above 6 Transformers. The figures 10500 are crossed out as shown.

- 15000
- Removed
- 10000
- 10000
- 10000
- 10000
- Removed
- 10000
- 10000
- 10000

11/2002/1